Supplementary Information

The controllable synthesis of orange-red emissive Au nanoclusters and used as portable colorimetric fluorometric probe for dopamine

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1. Optimum reaction conditions were optimized

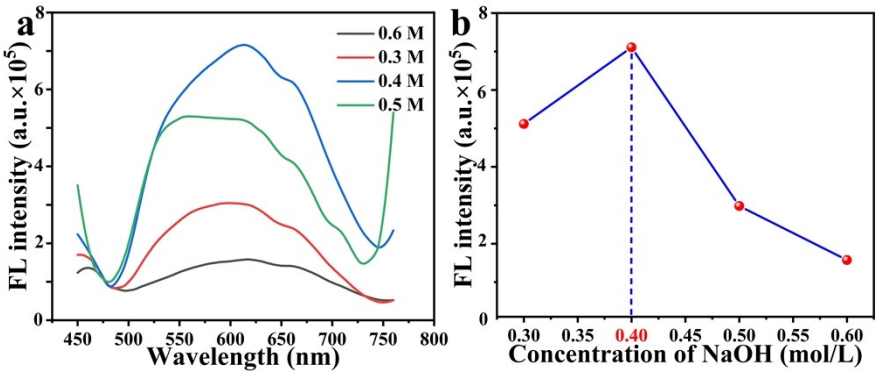

Fig. S1 The experiment of optimization of reaction concentrations of NaOH (0.3-0.6 M)

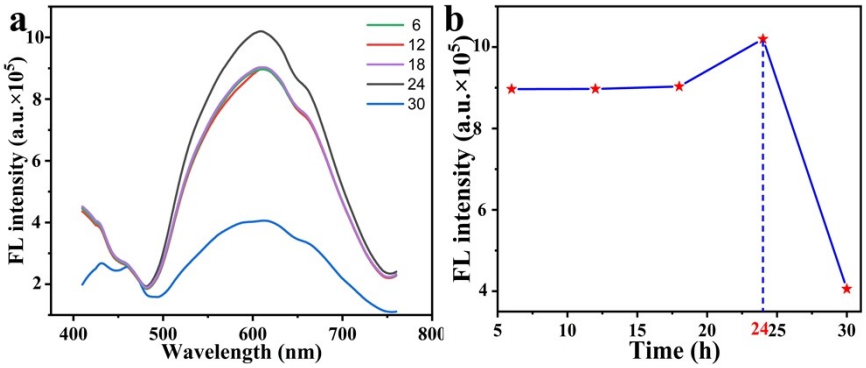

Fig S2 The experiment of optimization of reaction time (6-30 hours)

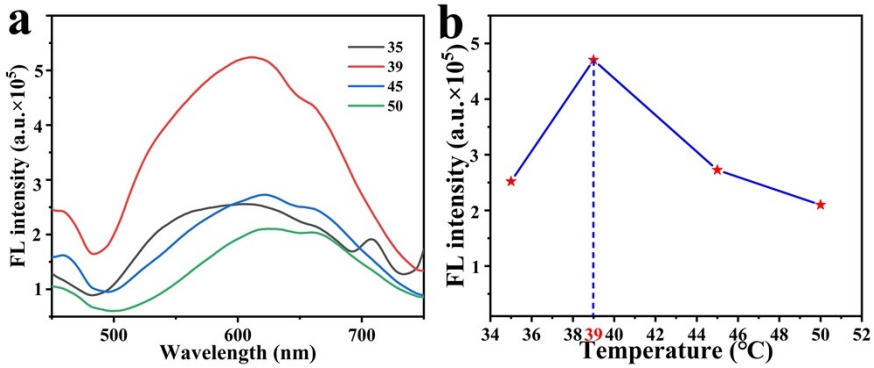

Fig. S3 The experiment of optimization of reaction temperature (35-50 °C)

2. Comparison of transmission microscope images before and after DA to M-AuNCs

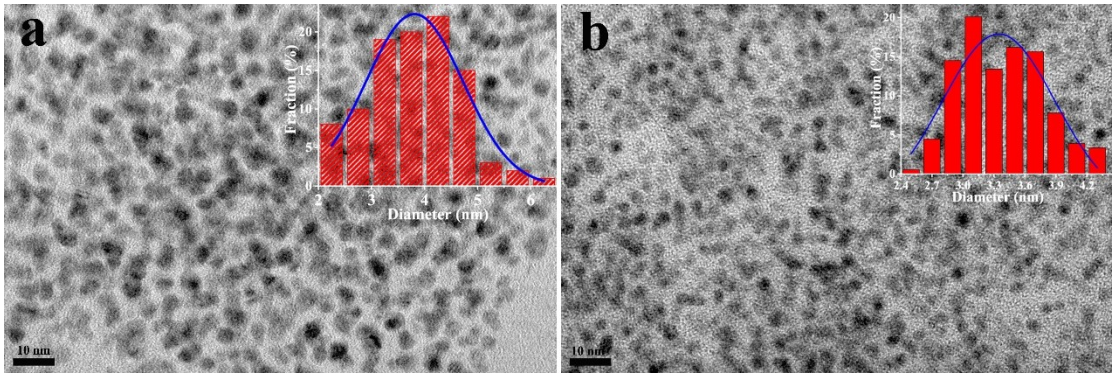

Fig. S4 TEM contrast of dopamine in M-AuNCs (a)TEM of M-AuNCs, (b)TEM of M-AuNCs+DA

3. Cellular imaging and MTT assay

The MTT test was carried out by using a microplate reader (Synergy HT, BioTek Instruments Inc., USA). To evaluate the cytotoxicity of the M-AuNCs, the viability of the U14 cells was assessed by measuring their ATP activity after exposure to the M-AuNCs. 100 μL of the cell suspensions in cell media at a concentration of 10^4 cells/mL were seeded in 96-well plates and allowed to attach overnight. After removal of the cell media, the wells were washed twice with PBS buffer (pH=7.4) and then 100 μL of the tested M-AuNCs at the relevant concentrations were added. After incubation, the reagent was added to each well to assess the ATP activity.

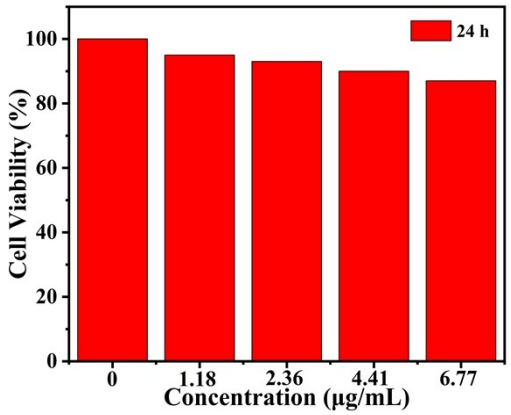

Fig. S5. Cell viabilities of U14 cells after incubation with M-AuNCs for 24 h by MTT assay.

Cellular imaging

After the U14 cells with M-AuNCs incubated for 4 h, majority cells showed light red light emission, indicated that the M-AuNCs were successfully absorbed by endocytosis. These results depicted that the prepared non-toxic and great biocompatibility pink fluorescent emission M-AuNCs could be excellently applied to the biological imaging.

4. Recovery of DA in serum

Table S1 Recovery of DA in serum

Sample	Added (μM)	Total Found (μM)	Recovery (%)	RSD (%, n=5)
serum	1.0	0.995	99.5	2.5
	0.6	0.611	101.8	1.8
	0.2	0.203	101.5	1.6

5. The QY of the M-AuNCs

The QY of the M-AuNCs was obtained through reported methods.[1] The related data were measured under the same excitation wavelength and slit bandwidths. The formula is as follows.

$$Q_{AuNCs} = Q_R \left(\frac{I_{AuNCs}}{I_R} \right) \left(\frac{A_R}{A_{AuNCs}} \right) \left(\frac{\eta_{AuNCs}^2}{\eta_R^2} \right)$$

where QY is the quantum yield of M-AuNCs, I refers to the integral area under FL spectra, η represents the refractive index of solvent, A refers to the UV-vis absorbance under the excitation wavelength. R is the reference (quinine sulfate).

[1] H. Huang, H. Li, A. Wang, S. Zhong, K. Fang and J. Feng, *Analyst*, 2014, **139**, 6536-6541.